

FutureGen – A Sequestration and Hydrogen Research Initiative

FutureGen will be the world's first zero emissions power plant that will produce electricity and hydrogen from coal while capturing and storing carbon dioxide. This ten-year effort integrates advanced coal gasification technology, hydrogen from coal, power generation, and carbon dioxide (CO₂) capture and geologic storage. The success of FutureGen will assure that coal, a low-cost, abundant, and geographically diverse energy resource, continues to globally supply exceptionally clean energy.

FutureGen will initiate operations around 2012 and virtually every aspect of the prototype plant will be based on cutting-edge technology. Technologies planned for testing at the prototype plant could provide future electric power generation with zero emissions that is only 10 percent higher in cost than today's electricity.

"Technology offers great promise to significantly reduce greenhouse gas emissions, especially carbon capture, storage, and sequestration technologies."

President George W. Bush
Announcing the National Climate
Change Technology Initiative

Goal

Design, construct and operate a nominal 275 megawatt prototype plant that produces both electricity and hydrogen with essentially zero emissions. The size of the plant is driven by the need for producing technically and commercially relevant data, including the requirement for producing one to two million metric tons per year of CO₂, to adequately validate the integrated operation of the gasification plant and the receiving geologic formation.

Approach

FutureGen is a public-private partnership involving the U.S. Department of Energy (DOE) and a broad, open consortium of industrial coal producers and electric utilities, as well as state governments and international participants. The FutureGen project will be supported by the leading U.S. sources of technology and innovation: universities, national laboratories, and industry.

Current Status

- On December 2, 2005, DOE signed the first phase cooperative agreement with the FutureGen Industrial Alliance, Inc.
- DOE intends to proceed in a step-wise fashion by conducting the cooperative agreement in two phases. Thus, a cooperative agreement has been entered into by DOE and the FutureGen Alliance to conduct the initial phase of the FutureGen project, while completing negotiations for the balance of the project.



Budget

- The FutureGen total project cost is estimated at \$952 million in constant fiscal year 2005 dollars. \$250 million of the total \$952 million (26%) is expected as cost sharing from the industry consortium. DOE also anticipates \$80 million of cost sharing from international sources.
- DOE has received appropriations of \$9 million for fiscal year 2004, \$18 million for fiscal year 2005, and \$18 million in the fiscal year 2006 budget. These appropriations are consistent with the FutureGen funding profile presented in the March 2004 *FutureGen Report to Congress* and have allowed the project to move forward.

Project Schedule

The initial phase will include work on siting, conceptual design, and National Environmental Policy Act (NEPA) compliance, and defining the remaining scope of the FutureGen project. The initial phase would also include establishment of Alliance administration, project planning for the lifecycle of the full FutureGen project, life-cycle cost estimating, and communications activities.

Initial activities also will include scoping out the follow-on cooperative agreement, which is expected to be in place just prior to the end of fiscal year 2006.

Site Selection Specifics

High priority is being assigned to the preparation and issuance – by the Alliance – of a competitive site selection solicitation.

The Industrial Alliance plans to issue a site selection solicitation in early 2006, to develop a short list of the most qualified candidate sites by mid-2006, and to make a final site selection in mid to late 2007.

- The Alliance will design a fair and open site selection process, subject to DOE review, that includes an opportunity for States, tribes, private organizations, and other interested parties to offer their sites to the Alliance for consideration. There will be an opportunity for public comment before the final solicitation is issued.
- As part of the process, the Alliance will develop objective siting criteria that are consistent with the overall goals of the FutureGen Project. The criteria will include the typical items that would be required for siting a power plant, such as sufficient land availability, access to water, access to transmission grid, ability to deliver coal to the site and similar items.
- There will be criteria that would be unique to FutureGen, such as the suitability of the site geology for CO₂ sequestration and other factors that are still being developed. The criteria, which will be explicitly identified in the solicitation, will be used to evaluate site proposals received by the Alliance.
- Key Environmental Assessment Activities (NEPA) – The National Environmental Policy Act requires DOE to fully consider all environmental impacts before proceeding with detailed design and/or construction. Fulfillment of this requirement will likely be a critical path activity and will necessitate collection of necessary and relevant environmental information on both the site and proposed project facilities; public participation through public meetings, and sufficient public comment periods to allow for informed discussions on the environmental and socio-economic impacts of the project.
- DOE will establish the overall NEPA strategy, issue an Advance Notice of Intent for an Environmental Impact Statement (EIS), and work on a draft EIS during fiscal year 2006.

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